FORAGE SUITABILITY GROUP

Subirrigated Saline

FSG No.: G034B2033CO
Major Land Resource Area: 034B - Warm Central Desertic Basins and Plateaus
Land Resource Unit 34B-2: 10-12 inches precipitation zone

PHYSIOGRAPHIC FEATURES

The land resource area 34B-2 occurs in Northeastern Utah and Western Colorado. Utah Counties included in this area are Carbon, Emery, Grand, Duchesne and Uintah. Colorado counties included in this area are Mesa, Delta, Montrose, Garfield, Rio Blanco and Moffat.

The soils in this group are found on flood plains or slighted depressed areas on plains and terraces.

	Minimum	Maximum
Elevation (feet):	4000	7000
Slope (percent):	0	15
Flooding:		
Frequency:	Rare	Rare
Duration:	Brief	Brief
Ponding:		
Depth (inches):		
Frequency:	None	None
Duration:	None	None
Runoff Class:	High	High

CLIMATIC FEATURES

The climate for this land resource area is considered arid or semi arid. The yearly total annual precipitation for this resource area ranges from 10-12 inches. Following are data for two climate stations within this precipitation zone. For data from a climate station nearer to your location, access the national Water and Climate Center at http://www.wcc.nrcs.usda.gov/, or visit your local Natural Resources Conservation Service Field Office.

Temperature Data Related to Growth of Plants										
County/ State	Climate Station	Elevation (Feet)	Growing Degree-Day Units †		Growing Season					
					Length of Period		Average Date of 32°F		Average Date of 28°F	
			Base 50°F	Base 40°F	32°F	28°F	Last frost in Spring	First Frost in Fall	Last Killing freeze in Spring	First Killing freeze in Fall
Moffat/ CO	Dinosaur Nat. Mnt.	5920	2555	4524	97	122	June 14	Sep. 10	June 2	Sep. 21
Garfield/CO	Rifle	5320	2330	4372	95	123	June 13	Sep. 8	May 20	Sep. 17

† **Growing Degree-Day Units** are computed as the difference between the daily average temperature and the base temperature. (Daily Average Temperature - Base Temperature) One unit is accumulated for each degree Fahrenheit the average temperature is above the base temperature. Negative numbers are discarded.

Example: If the day's high temperature was 95 and the low temperature was 55, the base 50 heating degree-day units is [(95 + 55) / 2] - 50 = 25. This is done for each day of the month and summed.

Precipitation and Temperature, Monthly and Annual Average				
Month	**Precipitation (inches)**		**Temperature (oF)**	
	Dinosaur Station	**Rifle Station***	**Dinosaur Station**	**Rifle Station**
January	0.68	0.88	20.2	22.0
February	0.53	0.74	25.8	30.0
March	1.01	0.91	36.5	38.6
April	1.07	0.96	45.8	47.0
May	1.28	1.06	55.4	55.6
June	1.22	0.92	65.7	64.3
July	1.09	1.02	73.1	70.6
August	0.80	1.06	70.8	68.7
September	1.11	1.20	61.1	60.1
October	1.46	1.38	48.8	48.8
November	0.77	1.01	34.5	36.8
December	0.74	1.15	22.6	25.2
Annual Average	**11.76**	**12.27**	**46.7**	**47.3**
***Note:** Rifle station is borderline between land resource area B2 (10-12 inches precipitation) and B3 (12-14 inches precipitation). However, the vegetation near Rifle is more representative for B2.				

Climate Station	**Location**	**From**	**To**
CO2286	Dinosaur Natl. Monument	1965	1990
CO7031	Rifle	1961	1990

SOIL PROPERTIES

This group consists of very deep, somewhat poorly drained, medium to moderately fine textured soils. The available water capacity is high and permeability is slow.

Drainage Class:	Somewhat poorly drained	To	Somewhat poorly drained
Permeability Class: (0 - 40 inches)	Slow	To	Slow
Frost Action Class:	High	To	High

	Minimum	**Maximum**
Depth:	60	>60
Organic Matter (percent): (surface layer)	0.5	1.0
Electrical Conductivity (mmhos/cm): (0 - 24 inches)	0	8
Sodium Absorption Ratio: (0 - 12 inches)	0	0
Soil Reaction (1:1) Water (pH): (0 - 12 inches)	7.9	8.8
Available Water Capacity (inches): (0 - 60 inches)	9	>9
Calcium Carbonate Equivalent (percent): (0 - 12 inches)	0	10

ADAPTED SPECIES LIST

The followings forage species are adapted to grow on the soils in this group. Additional information concerning plant characteristics of a number of the listed species as well as individual cultivars of many of these species can be accessed at the following web site: http://plants.usda.gov/

Cool Season Grasses	**Plant Symbol**	**Dryland**	**Irrigated**
Newhy hybrid wheatgrass	ELHO	NS	F
Russian wildrye	PSJU3	F	F
Slender wheatgrass	ELTRS	NS	F
Tall wheatgrass	THPO	NS	F
Warm Season Grasses	**Plant Symbol**	**Dryland**	**Irrigated**
Alkali sacaton	SPAI	F	F
Inland saltgrass	DISP	NS	G

G - Good adaptation for forage production on this group of soils in this MLRA

F - Fair Adaptation but will produce at its highest potential

NS - Species is not suited or adapted to the site and should not be planted

PRODUCTION ESTIMATES

Production estimates listed here should only be used for making general management recommendations. On site production information should always be used for making detailed planning and management recommendations.

Listed below are low and high production estimates for the more commonly grown forages for this group. The high forage production estimates are based on dense, vigorous stands of climatically adapted, superior performing cultivars. Stands are properly fertilized to obtain high yields. Pest infestations are kept below economic thresholds. Mechanical harvests are managed to maintain stand life by cutting at appropriate stages of maturity and harvest intervals. Optimum beginning and ending grazing heights are adhered to, if stands are grazed. Adequate time is allowed for plant recovery before entering winter dormancy under both harvest regimes.

These production estimates represent total annual above ground plant production on an air-dry-matter basis. Production estimates for hay and grazing can be calculated from these numbers by multiplying them by a harvest efficiency factor. Seventy- percent harvest efficiency is commonly used when converting to hay yields. Pasture harvest efficiency depends upon the grazing management system applied, and usually ranges from 25 to 50 percent efficiency.

	Dryland		**Irrigated**	
	Production Range (lb/ac)		**Production Range (lb/ac)**	
Forage Crop	**Low**	**High**	**Low**	**High**
Alkali sacaton	400	800	4300	7100
Inland saltgrass	NS	NS	4300	7100
Newhy hybrid wheatgrass	NS*	NS	4300	7100
Russian wildrye	400	800	3600	6400
Slender wheatgrass	NS	NS	2900	5700
Tall wheatgrass	NS	NS	5000	7900

*NS = not suited

FORAGE GROWTH CURVES

Growth Curve Number: CO1231
Growth Curve Name: Cool Season Grasses
Growth Curve Description: Grand Valley, Irrigated Pasture
Percent Production by Month:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	5	30	30	5	10	15	5	0	0

Growth Curve Number: CO1232
Growth Curve Name: Warm-Season Grasses
Growth Curve Description: Grand Valley, Irrigated Pasture
Percent Production by Month:

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
0	0	0	0	5	20	40	25	5	5	0	0

SOIL LIMITATIONS

Water Table - These soils have a deep to shallow seasonal high water table (18-48 inches). These fluctuating water tables generally increase the level of salinity in the plant zone.

Soil Compaction - These soils are susceptible to compaction, especially if grazed or hayed when the topsoil is too wet. Soil compaction can reduce forage production.

Salinity - A saturation extract of these soils has an electrical conductivity ranging from 0-8mhos/cm, with the majority of soils being slightly saline (4-8 mmhos/cm). Slightly saline soils restrict they yield of most forage crops except the most tolerant. Forage yields are reduced due to limited uptake of minerals and water. The available water capacity of saline soils is reduced by 25 % for each 4 mmhos /cm of electrical conductivity.

MANAGEMENT CONSIDERATIONS

Water Table - To insure forage production, use only species adapted to this forage suitability group.

Soil Compaction - Defer grazing or delay haying when the topsoil is wet to minimized the effects of soil compaction and maintain a healthy forage stand. Allow the soil to dry to field capacity before entering forage stand with machinery or livestock.

Salinity - Plant only salt-tolerant forage species to insure production.

FSG DOCUMENTATION

Similar FSGs:

FSG ID	FSG Narrative
G034B1033CO	Subirrigated Saline in land resource area B1 is similar, but yearly precipitation is less (8-10 inches).

References:

United States Department of Agriculture, Soil Conservation Service. Land Resource Regions and Major Land Resource Areas of The United States. Agriculture Handbook 296. Washington, D.C.

United States Department of Agriculture, Natural Resources Conservation Service. National Water and Climate Center. http://www.wwc.nrcs.usda.gov/

United States Department of Agriculture, Natural Resources Conservation Service. Official Soil Series Descriptions. http://soils.usda.gov/classification/main.htm

United States Department of Agriculture, Natural Resources Conservation Service. 1997. National Range and Pasture Handbook. Grazing Lands Technology Institute.

Brummer, J.E., C.H., Pearson, and J. J. Johnson. 2000. Colorado Forage Research 1999. Alfalfa, Irrigated Pastures and Mountain Meadows. Colorado State University , Agricultural Experiment Station, Technical Report TR00-6.

United States Department of Agriculture, Natural Resources Conservation Service. 2002. Colorado Plant Materials Technical Note No. 59 (Revised).

United States Department of Agriculture, Natural Resources Conservation Service. The PLANTS database. 2002. http://plants.usda.gov/.

Personal Communication from various Technical Specialists from Colorado Natural Resources Conservation Service.

Cooley, A.W., C.H., Pearson and J. Brummer. Intermountain Grass and Legume Forage Production Manual. Colorado State University Cooperative Extension.

Montana State University. 2000. Montana Interagency plant Materials Handbook for Forage Production, Conservation, Reclamation, and Wildlife. MSU Extension Service EB 69.

STATE CORRELATION:

This site has been correlated with the following states: UT

FORAGE SUITABILITY GROUP APPROVAL:

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